95A285

WINGSPAN : 800mm (31.5 inches)
LENGTH : 940mm (37 inches)
WEIGHT : 750g (26.46 oz)
BATTERY : 11.1V Lithium Polymer Battery
POWER SYSTEM : Outrunner Brushless Motor
RC SYSTEM : 4 Channel

Part List

95A285-02

Main Wing

95A285-03

Horizontal Wings

95A285-04

Vertical Tail

95A285-05

Chair

95A285-01

Fuselage

95A285-08

Main Landing Gear

95A285-09

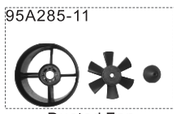
Front Landing Gear

95A285-06

Canopy

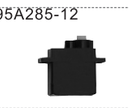
95A285-10

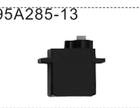
Screw

95A285-11

Ducted Fan

95A285-07

Pilot

95A285-12

9g Servo(150mm)

95A285-13

9g Servo(300mm)

95A285-14

ESC

95A285-15

Battery

95A285-16

Motor

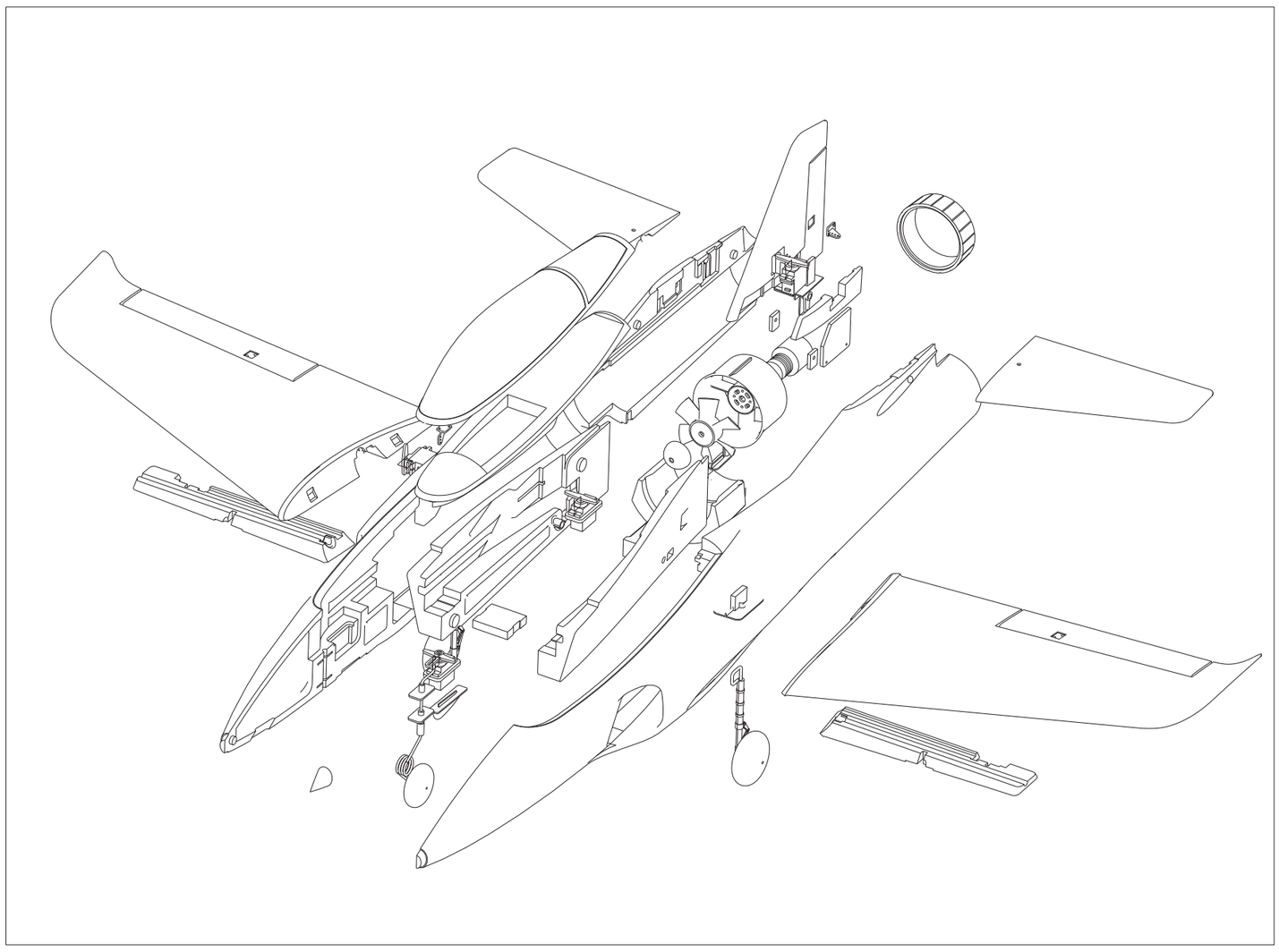
95A285-17

Receiver

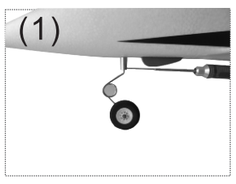
95A285-18

Transmitter

DIRECTIONS FOR ASSEMBLY AND ADJUSTMENT

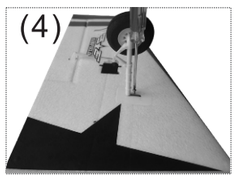


ASSEMBLY:


(1)

(2)

(3)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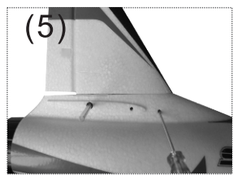
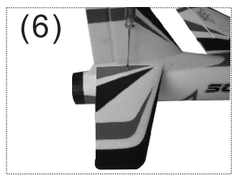

(5)


(6)

(1) Install the front landing gear onto the fuselage.

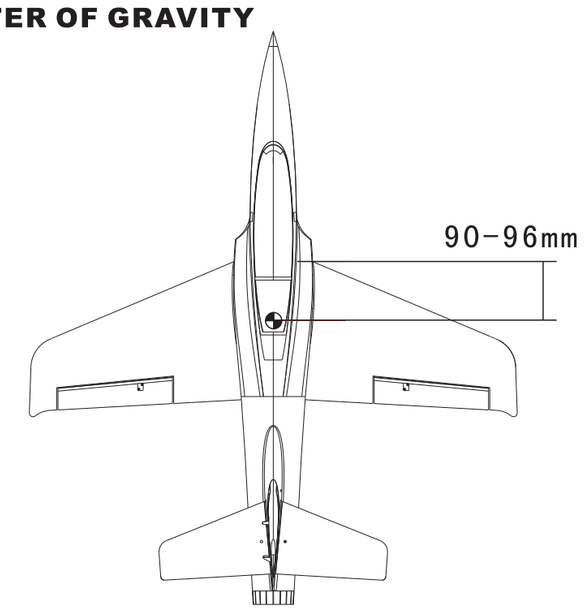
(2)(3) Insert the connecting rod， connect aileron servo wire and install the main wings onto the fuselage.

(4) Install the main landing gear onto the main wings by screw PWA2.0*8MM.

(5) Connect the rudder servo wire and install the vertical wings onto the fuselage.

(6) Connect the horizontal wings with the connecting shaft and install onto the fuselage.

CENTER OF GRAVITY



Remove battery cover and install 8 alkaline or rechargeable AA batteries(not provided)

ATTENTION:
A. Turn off power before installing batteries.
B. Only use the same type of battery, do not mix brand type.
C. Replace all batteries at the same time with new ones.
D. Do not mix old and new batteries.

Throttle Max
Rudder Left **Rudder Right**
Throttle Min

Elevator Down
Aileron Left **Aileron Right**
Elevator Up

(Mode II, North/South America).

Airfield-RC guarantees this product to be free of manufacturing faults and material defects. This product has been checked and fine tuned individually by professional pilot and quality control pilot. The warranty does not cover any component parts damaged by use and modification. Please visit http://www. airfieldrc .com for updated product information.

This product is not a toy. It is not recommended for children under 14 years old and any minor should be accompanied by an adult when operating. This product is a precision machine that requires proper assembly and setup to avoid accidents. Failure to take caution when operating this product may result in serious injury or property damage. It is the owner's responsibility to operate this product in a safe manner. Manufacturer and its distributors are not responsible in any way for any and all bodily injury(s) and/or property damage that may occur from the use of or caused by in any way of this product.

MADE IN CHINA

WARNINGS

• The product is not intended for those under 14 years of age without proper adult supervision. The product is not a toy. It is a precision machine requiring proper assembly and setup to avoid accidents and it is the responsibility of the owner to operate this product in a safe manner as it can cause serious personal injury and damage to property due to carelessness or misuse.

• The spinning rotors on this product can be dangerous! When operating/flying, always be aware of the spinning rotors. Be careful not to let them come close to your body, other people or loose clothing. Keep your hands, fingers and any articles of clothing away from the rotors.

• Do not attempt to disassemble or modify any of the product components without the assistance of an experienced RC user.

• Only use the correct type of battery to operate. Using any wrong type of battery will damage the product and possibly make it dangerous to operate.

• The motor(s) may get hot during use. Always allow 10-15 minutes between each flight for the motor to cool down. This will prolong the life of your product.

• Choose an appropriate operating site consisting of flat, smooth ground, and clear open field. Do not operate near buildings, high voltage cable lines, or trees to ensure safety operation. Operate in safe area only, away from other people. RC models are prone to accidents, failures, and crashes due to a variety of reasons including, lack of maintenance, pilot error, and radio interference. Pilots are responsible for their actions and damage or injury occurring during the operation.

• Do not operate in inclement weather, such as rain, wind, snow and darkness.

• The product is composed of precision electrical components. It is critical to keep the product away from moisture and other contaminants. Do not allow them to get wet. Electrical damage may occur that could affect safe operation.

• After each use, always allow the battery to cool down before recharging. When charging the battery pack, do not overcharge! If batteries get hot during charging, discontinue charging immediately and disconnect the battery from the charger. Never leave battery unattended while charging. If you are unsure of how to charge this battery, please seek the advice of experienced RC users. Never let children charge the battery without adult supervision.

• Always turn on the transmitter before connecting the battery on the model. When turning off the model, always disconnect the battery first, and then turn off the transmitter. If the order is reversed, the model may become uncontrollable and cause serious damage.

•If you are in trouble of your ability to operate the model, we strongly recommend that you seek assistance from experienced RC users or join your local model flying club to gain the required knowledge and skill. As the manufacturer and distributor, we assume no liability for the use of this product.

• Before turning on your model and transmitter, please check to make sure no one else is operating under the same frequency. Frequency interference can cause your model, or other's models to crash. The guidance provided by experienced RC users will be valuable for the assembly, tuning, trimming, and actual first flight.

• Never allow batteries to run low or you might lose control of the model.

• You should complete a successful pre-flight check of your radio equipment and model prior to each flight.

• Plastic is very susceptible to damage or deformation due to extreme heat and cold climate. Do not store the model near any source of heat such as oven or heater. Store the model indoors, in a climate-controlled, room temperature environment.

Charge the Li-Po battery pack

Do not charge the battery unattended at all time.

Lithium Polymer (LiPo) Battery Warnings

- Never charge a lithium polymer battery with a charger designed for NiCd, NiMH, or any other type of battery chemistry. Use only charger designed for LiPo battery.
- Do not leave LiPo battery unattended during charging.
- Do not overcharge the battery.
- Always place the battery on a heat resistant surface alone when charging.
- Always put the LiPo battery inside a charging protection container while charging.
- Do not allow LiPo cells to overheat at any time. Cells which reach greater than 140 Fahrenheit (60°C) will usually become damaged and will catch fire.
- Do not allow LiPo cells on or near combustible materials including paper, plastic, carpets, vinyl, leather, and wood, inside an R/C model or full size automobile.
- Do not over discharge Lipo; doing so will damage the battery.
- Do not expose LiPo cell to water or moisture at any time.
- Do not store battery near open flame or heater.
- Do not assemble LiPo cells or pre-assembled packs together with other LiPo cells or packs.
- Always store LiPo battery in a secure location away from children.
- Always remove the LiPo battery if model is involved in any kind of crash. Carefully inspect the battery and connectors for even the smallest damage. CAUTION: cells may be hot!
- Do not allow the electrolyte to get into eyes or on skin. Wash affected areas immediately if they come into contact with electrolyte. Do not alter or modify connectors or wires of a LiPo battery pack.
- Always inspect the condition of the battery before charging and operating.
- Do not short circuit the LiPo battery.
- Do not have contact with a leaky/damaged battery directly.
- Do not charge battery out of recommended temperature rang (0°C-45°C)

Specification:

Type	PN#Model	Cont.\Burst Current(A)	Battery cell NiXX/Lipo	Weight (g)	BEC Output	Size (mm) W*L*H	User Program
A-ZTW3A BEC	ZTW12003	3A\5A	3-10 NC \ 1-3 Lipo	2.5	5V / 1A	11 x 17 x 4	yes
A-ZTW6A BEC	ZTW12006	6A\8A	5-10 NC \ 2-3 Lipo	5	5V / 1A	13 x 21 x 4	yes
A-ZTW8A BEC	ZTW12008	8A\10A	5-12 NC \ 2-4 Lipo	8	5V / 1A	21 x 22 x 4	yes
A-ZTW10A BEC	ZTW12010	10A\12A	5-12 NC \ 2-4 Lipo	8	5V / 1A	21 x 22 x 4	yes
A-ZTW12A BEC	ZTW12012	12A\16A	5-12 NC \ 2-4 Lipo	8	5V / 1A	21 x 22 x 4	yes
A-ZTW20A BEC	ZTW12020	20A\30A	5-12 NC \ 2-4 Lipo	18	5V / 2A	23 x 33 x 6	yes
A-ZTW25A BEC	ZTW12025	25A\35A	5-12 NC \ 2-4 Lipo	20	5V / 2A	23 x 33 x 6	yes
A-ZTW30A BEC	ZTW12030	30A\40A	5-12 NC \ 2-4 Lipo	28	5V / 3A	23 x 43 x 6	yes
A-ZTW40A SBEC	ZTW12040	40A\60A	5-18NC \ 2-6 Lipo	32	5.5V/ 4A	23 x 52 x 7	yes
A-ZTW50A SBEC	ZTW12050	50A\70A	5-18NC \ 2-6 Lipo	32	5.5V/ 4A	23 x 52 x 7	yes
A-ZTW60A SBEC	ZTW12060	60A\80A	5-18NC \ 2-6 Lipo	44	5.5V/ 4A	23 x 52 x 14	yes
A-ZTW70A SBEC	ZTW12070	70A\90A	5-18NC \ 2-6 Lipo	48	5.5V/ 4A	23 x 52 x 14	yes
A-ZTW85A SBEC	ZTW12085	85A\100A	5-18NC \ 2-6 Lipo	60	5.5V/ 4A	34 x 52 x 14	yes
A-ZTW110A SBEC	ZTW12110	110A\120A	5-18 NC \ 2-6 Lipo	86	5.5V/ 4A	34 x 52 x 20	yes
A-ZTW100A OPTO HV	ZTW12100	100A\120A	18-38NC\6-12Lipo	76		34 x 52 x 20	yes

ZTW A-Series ESC's Features:

- Extremely low internal resistance
- Super smooth and accurate throttle linearity
- Safety thermal over-load protection
- Auto throttle shut down in signal lose situation
- Supports high RPM motors
- Power arming protection (prevents the motor from accidentally running when switched ON)
- New Advanced programming software

ZTW A-Series's ESC allows you to program all functions to fit your specific needs, which makes it very efficient and user friendly:

1.User programmable brake setting (we recommend using brake for only folding props applications)
2.User programmable battery type(LiPo or NiCd/NiMh)
3.User programmable low voltage cutoff setting
4.User programmable factory default setup restore
5.User programmable timing settings (to enhance ESC efficiency and smoothness)
6.User programmable soft acceleration start ups (for delicate gearbox and helicopter applications)
7.User programmable governor mode (for helicopter applications)
8.User programmable motor rotation(clockwise\counterclockwise)
9.User programmable switching frequency
10.User programmable low voltage cutoff type (power reduction or immediate shutdown)

Settings:

1.Brake: ON / OFF

* **ON**- Sets the propeller to the brake position when the throttle stick is at the minimum position (Recommended for folding props).
* **OFF**- Sets the propeller to freewheel when the throttle stick is at the minimum position.

2.Battery type: LiPo or NiCad / NiMh

* **NiCad / NiMH** – Sets Low Voltage protection threshold for NiCad/NiMH cells.
* **LiPo** – Sets Low voltage protection threshold for LiPo cells and automatically detects the number of cells within the pack.

Note: Selecting the NiCad/NiMH option for the battery type, triggers the ESC to automatically set the cutoff threshold to the factory default of 60%. The cutoff threshold can then be subsequently altered through the Low Voltage protection function, if required. The ESC will read the initial voltage of the NiCad/NiMh pack once it is plugged in and the voltage read will then be used as a reference for the cutoff voltage threshold.

3.Low Voltage Protection Threshold (Cutoff Threshold):

Low / Medium / High

1) For Li-xx packs- number of cells are automatically calculated and requires no user input apart from defining the battery type. This ESC provides 3 setting options for the low voltage protection threshold ; Low (2.8V)/ Medium (3.0V)/ High (3.2V). For example : the voltage cutoff options for an 11.1V/ 3 cell Li-Po pack would be 8.4V (Low)/ 9.0V(Med)/ 9.6V(High)

2) For Ni-xx packs-low / medium / high cutoff voltages are 50%/60%/65% of the initial voltage of the battery pack.. For example: A fully charged 6 cell NiMh pack's voltage is 1.44V x 6=8.64V,when "LOW" cutoff voltage is set, the cutoff voltage is: 8.64V x 50%=4.3V and when "Medium" of "High" is set, the cutoff voltage is now 8.64V X 65%=5.61V.

4. Restore factory setup defaults:

Restore- Sets the ESC back to factory default settings;

Brake:	OFF
Battery type Detect:	LiPo with Automatic Cell
Low voltage Cutoff threshold:	Medium (3.0V/60%)
Timing Setup:	Automatic
Soft Acceleration Start Up:	Soft Acceleration
Governor Mode :	RPM OFF
Frequency :	8kHz
Low Voltage Cutoff Type:	Reduce power

5.Timing Setup : Automatic/ Low / High.

* **Automatic (7-30 deg)** – ESC automatically determines the optimum motor timing
* **Low (7-22 deg)** – Setting for most 2 pole motors.
* **High(22-30 deg)**-setting for motors with 6 or more poles.

In most cases, automatic timing works well for all types of motors. However for high efficiency we recommend the Low timing setting for 2 pole motors (general in-runners) and high timing for 6 poles and above (general out-runners). For higher speed, High timing can be set. Some motors require different timing setups therefore we suggest you to follow the manufacturer recommended setup or use the automatic timing setting if you are unsure.

Note: Run your motor on the ground first after making any changes to your motor timing!

6.Soft Acceleration Start ups: Very Soft / Soft Acceleration / Start Acceleration

* **Very Soft** – Provides initial slow 1.5 sec ramp-up from start to full rpm intended to protect delicate gears from stripping under instant load. This setting is recommended for either fixed wing models equipped with gearboxes and / or helicopters.
* **Soft Acceleration**- Provides initial slow 1 sec ramp-up from start to full rpm. This setting is recommended for either fixed wing models equipped with gearboxes and or helicopters.
* **Start Acceleration** – Provides quick acceleration start ups with a linear throttle response. This is recommended for fixed wing models fitted with direct drive setups.

7.Active RPM Control (Heli Governor mode)

*** RPM Control OFF**

* **First Range:** There will be a 5-second delay from start to full rpm, but if the throttle is cutoff after starting, then the next start will be as normal start.
* **Second Range**: There will be a 15-second delay from start to full rpm, but if the throttle is cutoff after starting, then the next start will be as normal start.

Note: Once the Governor Mode is enabled, the ESC's Brake and Low Voltage Cutoff Type settings will automatically be reset to No Brake and Reduce Power respectively regardless of what settings they were previously set.

8.Motor Rotation: Forward / Reverse

In most cases motor rotation is usually reversed by swapping two motor wires. However, in cases where the motor cables have been directly soldered the ESC cables, motor rotation can be reversed by changing the value of setting on the ESC.

9.Switching Frequency : 8kHz/16kHz

* **8kHz** – Sets ESC switching frequency for 2 pole motors, e.g. in-runners.
* **16kHz** – Sets ESC switching frequency for motors with more than 2 poles, e.g. out-runners.

Although 16kHz is more efficient with our Thrust motors, the setup
default is 8kHz due to the higher RF noises caused at 16kHz.

10.Low Voltage Cutoff Type : Reduce Power / Hard cutoff

* Reduce Power – ESC reduces motor power when the pre-set Low Voltage Protection Threshold value is reached. (recommended)
* Hard Cutoff – ESC instantly cuts motor power when the pre-set Low Voltage Protection Threshold value is reached.

Programming Mode Audible Tones

Programming Mode Audible Tones	ESC Functions
Throttle Calibration	
(within the first 4 Sec)●● ●● ●● ●●	
1 Brake	
_ * _ * _ * _ *	Brake On /Off
2 Battery type	
～ ～ ～ ～	NiCad
～～ ～～ ～～ ～～	LiPo
3 Low Voltage Cutoff Threshold	
* _ _ * * _ _ * * _ _ * * _ _ *	Low2.8V/50%
* _ _ _ * * _ _ _ * * _ _ _ * * _ _ _ *	Medium3.0V/60%
* _ _ _ _ * * _ _ _ _ * * _ _ _ _ * * _ _ _ _ *	High3.2V/65%
4 Restore Factory Setup Defaults	
— — — —	Restore
5 Timing Setup	
– – – –	Automatic (7-30°)
–– –– –– ––	Low (7-22°)
––– ––– ––– –––	High (22-30°)
6 Soft Acceleration Start Ups	

\/\/ \/\/ \/\/ \/\/	Very Soft
\/ \/ \/ \/	Soft Acceleration
\/\/\/ \/\/\/ \/\/\/ \/\/\/	Start Acceleration
7 Governor Mode	
_*_ _*_ _*_ _*_	Rpm off
_**_ _**_ _**_ _**_	Heli first range
_***_ _***_ _***_ _***_	Heli second range
8 Motor Rotation	
W W W W	Forward/ Reverse
9 Switching Frequency	
// // // //	8kHz
\\ \\ \\ \\	16kHz
10 Low Voltage Cutoff Type	
- - - - __ __ __ __	Reduce Power
- - - - __ __ __ __	Hard Cut Off

Using Your New ESC

Improper polarity or short circuit will damage the ESC therefore it is your responsibility to double check all plugs for proper polarity and first fit BEFORE connecting the battery pack.

Alert Tones

The ZTW ESC is equipped with audible alert tones to indicate abnormal conditions at power up.

1. Continuous beeping tone (****) – Indicates that throttle stick is not in the minimum position.

2. Single beeping tone followed by a one second pause (* * * *)– Indicates that the battery pack voltage exceeds the acceptable range. (The ESC automatically checks and verifies the battery voltage once the battery is connected).

Built-in Intelligent ESC Safety Functions

1. **Over-heat protection**: When the temperature of ESC exceeds 110 deg C, the ESC will reduce the output power to allow it too cool.

2. **Lost Throttle signal protection**: The ESC will automatically cut power to the motor when it detects a lost of throttle signal for 2 seconds, then the motor will emit continuous beeping tone.

POWERING UP THE ESC FOR THE FIRST TIME & SETTING THE AUTOMATIC THROTTLE CALIBRATION

The ZTW ESC features Automatic Throttle Calibration to attain the smoothest throttle response and resolution throughout the entire throttle range of your transmitter. This step is done once to allow the ESC to "learn and memorize" your Transmitter's throttle output signals and only repeated if you change your transmitter.

1.Switch your Transmitter ON and set the throttle stick to its maximum position.

2.Connect the battery pack to the ESC. Wait for about 2 seconds, the motor will beep for twice, then put the throttle in the minimum position, the motor will also beep, which indicates that your ESC has got the signal range of the throttle from your transmitter.

The throttle is now calibrated and your ESC is ready for operation.

ENTERING THE PROGRAMMING MODE

1. Switch your Transmitter **ON** and set the throttle to its **maximum** position.
2. Connect the battery pack to the ESC.
3. Wait until you hear two short beeps (•• •• •• ••) confirming that the ESC has now entered the programming mode.
4. If the throttle stick is left in the **maximum** position beyond 5 seconds, the ESC will begin the sequence from one function and its associated setting options to another. (Please refer to the table below to cross reference the functions with the audible tones).
5. When the desired tone for the function and setting option is reached, move the throttle stick down to its **minimum** position. ESC will emit two beeps (**) confirming the new setting has been stored.
6. The ESC only allows the setting of one function at a time.
   Therefore should you require making changes to other function, disconnect the battery

pack and wait 5 seconds to reconnect the battery and repeat the above steps.

NORMAL ESC START UP PROCEDURE

1. Switch your Transmitter **ON** and set the throttle to its **minimum** position.
2. Connect the battery pack to the ESC.
3. When the ESC is first powered up, it emits two sets of audible tones in succession indicating its working status.
   * The first set of tones denotes the number of cells in the LiPo pack connected to the ESC. (Three beeps (***)indicates a 3 cell LiPo pack while 4 beeps (****) indicates a 4 cell LiPo pack).
   * The second set of tones denotes Brake status (one beep(*) for Brake "ON" and two beeps (**) for Brake "OFF").

The ESC is now ready for use.

General Safety Precautions

Do not install the propeller (fixed wing) or drive pinion(helicopter) on the motor when you test the ESC and motor for the first time to verify the correct settings on your radio. Only install your propeller or pinion after you have confirmed that the settings on your radio is correct.

- Never use ruptured or punctured battery cells.
- Never use battery packs that are known to overheat.
- Never use short circuit battery or motor terminals.
- Always use proper insulation material for cable insulation.
- Always use proper cable connectors.
- Do not exceed the number of cells or servos specified by the ESC.

Wrong battery polarity will damage the ESC and void the warranty.

- Install the ESC in a suitable location with adequate ventilation for cooling. This ESC has a built-in over temperature cutoff protection feature that will immediately cut power to the motor once the ESC temperature exceeds the 230 Deg F/ 110 Deg C high temperature limit.
- Use only batteries that are supported by the ESC and ensure the correct polarity before connecting.
- Switch your Transmitter ON and ensure the throttle stick is in the minimum position before connecting the battery pack.
- Never switch your transmitter off while the battery is connected to your ESC.
- Only connect your battery pack just before flying and do not leave your battery pack connected after flying.
- Handle your model with extreme care once the battery pack is connected and keep away from the propeller at all times. Never stand in-line or directly in front of any rotating parts.
- Do not immerse the ESC underwater or allow it to get wet while powered up.
- Always fly at a designated flying site and abide by the rules and guidelines set by your flying club.

Trouble Shooting

Trouble	Possible Reason	Action
Motor doesn't work, but there are audible tones signalling the number of cells after powering up ESC.	The ESC throttle calibration has not set up.	Set up the ESC throttle calibration.
Motor doesn't work and no audible tone emitted after connecting the battery. Servos are not working either.	Poor/loose Connection between battery Pack and ESC.	Clean connector terminals or replace connector.
	No power	Replace with a freshly charged battery pack
	Poor soldered connections (dry joints)	Re-solder the cable connections
	Wrong battery cable polarity	Check and verify cable polarity

	ESC throttle cable connected to receiver in the reverse polarity	Check the ESC cable connected to the ESC to ensure the connectors are in the correct polarity.
	Faulty ESC	Replace ESC
Motor doesn't work and no audible tone emitted after connecting the battery BUT servos are working. Or Motor doesn't work after powering up the ESC. An alert tone with single beeping tones followed by a short pause (* * * *) is emitted.	Poor / loose connection between ESC and motor	Clean connector terminals or replace connectors
	Burnt motor coils	Replace motor
	Poor soldered connections(dry joints)	Re-solder the cable connections
	The battery pack voltage exceeds the acceptable range.	Replace with a freshly charged battery pack Check battery pack voltage
Motor doesn't work after powering up the ESC. An alert tone with continuous beeping tones (****) is emitted.	The throttle stick is not in the minimum position at power up.	Move the throttle stick to the minimum position.
Motor doesn't work after powering up the ESC.ESC emits two audible tones followed by short beeps (●● ●● ●● ●●)	Reversed throttle channel caused the ESC to enter the programming mode.	Enter the servo reverse menu on your transmitter and reverse the throttle channel. Note: For Futaba radios set the throttle channel to Reverse.
Motor runs in reverse rotation	Wrong cables polarity between the ESC and the motor.	Swap any two of the three cable connections between the ESC and the Motor or access the Motor Rotation function via the ESC programming mode and change the pre-set parameters.
Motor stops running in flight.	Lost throttle signal	Check proper operation of the radio equipment. Check the placement of the ESC and the Receiver and check the route of the receiver's aerial and ESC cables to ensure there is adequate separation to prevent RF interference. Install a ferrite ring on the ESC's throttle cable.
	Battery Pack voltage has reached the Low Voltage Protection threshold.	Land the model immediately and replace the battery pack.
	Possible bad cable connection	Check and verify the integrity of the cable connections

Motor restarts abnormally ESC Overheats	Possible RF Interference at the flying field.	The normal operation of the ESC may be susceptible to surrounding RF interference. Restart the ESC to resume normal operation on the ground to verify recurrence. If the problem persists, test the operation of the ESC at a different flying field.
	Inadequate Ventilation	Relocate the ESC to allow better ventilation
	Servos drawing too much current and over loading the ESC.	Use servos that are adequately sized for the ESC. The maximum BEC current drawn should be within the BEC limits.
	Over sized motor or prop	Reduce Prop size or resize the motor